Amendments to the Specification

Please amend the paragraph beginning on page 2, line 9 as follows:

Here, in a conventional database managing apparatus, the data is compressed by a unit of record ~~in a lump~~ as a whole. Therefore, when the database is searched, it needs to decompress by a unit of the record ~~in a lump~~ as a whole before searching the database file. In general, ~~a~~ the size of a main memory of the CPU for performing the data compression, the data compression, or the search process, is approximately 10 MB (mega bytes~~), however~~. However, a size of the total records in the database is approximately 100 MB. Therefore, when the CPU performs the search process, the CPU needs to repeat a series of processes including:

Please amend the paragraph beginning on page 2, line 25 as follows:

Furthermore, in a relation model database, which has plural attributions for one article, a projection may be performed. The projection retrieves only a particular record having a desired attribution (field). In such a case, it also needs to restore entire records to obtain only the particular record belonging to one attribution.

Please amend the paragraph beginning on page 3, line 8 as follows:

According to the present invention, attribution record group forming means classifies data, which is requested to be stored in a database, according to attributions defined in the database, and makes plural attribution record groups corresponding to each of the attributions. Data compressing means compresses the attribution record groups in a unit of each of the

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attribution record groups. File forming means combines each of the attribution record groups, which is compressed by the data compressing means, and for forming a database file. As a result, the database managing apparatus can reduce a needless step for decompressing record data belonging to other attributions than the attribution to be searched for. Furthermore, it can retrieve the requested record in a short time.

Please amend the paragraph beginning on page 3, line 20 as follows:

According to another aspect of the present invention, a database record retrieving apparatus retrieves a target record to be searched from a database file, which is made up of plural attribution record groups (A-E), each of which is compressed in a unit of each of the attribution record groups. Data compressing means decompresses a particular attribution record group, which is to be searched, when a search request for searching the database file is received. Searching means searches for a target record containing a search key in the particular attribution record group. ~~Here, the~~ The data decompressing means further decompresses the other attribution record groups, which are different from the particular attribution record group, when the searching means finds the target record. As a result, the database managing apparatus can ~~reduce needless step~~ unnecessary steps for decompressing record data belonging to other attributions than the attribution to be searched for. Furthermore, it can retrieve the requested record in a short time.

Please amend the paragraph beginning on page 4, line 10 as follows:

These and ~~another~~ <u>other</u> objects, features and characteristics of the present invention will be appreciated from a study of the following detailed description, the appended claims, and drawings, all of which form parts of this application. In the drawings, ~~same~~ <u>like or</u> <u>corresponding portions</u> ~~or corresponding to portions are put the same numerals each other~~ <u>are</u> <u>identified by like numbers</u> to eliminate redundant explanation. In the drawings:

Please amend the paragraph beginning on page 7, line 26 as follows:

Here, as ~~show~~ <u>shown</u> in FIGS. 4A and 4B, in ~~this~~ <u>the present</u> embodiment, the attributions of the database ~~includes~~ <u>include</u> the following attributions A-E (in the case where the number of the attributions n=5).

Please amend the paragraph beginning on page 8, line 17 as follows:

(1) The controller 7 detects whether an address of a data string, which is the same as <u>the</u> initial two characters of a data string to be compressed, is registered in a data table of a ~~"dictionary",~~ <u>"dictionary"</u> by using a searching method such as a binary search, a B-Tree search, or a hash search. When such ~~the~~ <u>an</u> address is not registered, the controller 7 registers <u>its</u> own initial address.

Please amend the paragraph beginning on page 9, line 11 as follows:

On the contrary, when the maximum number of the matching is ~~to~~ two or less than two, the controller 7 does not perform the compression and directly ~~output~~ outputs the data to be compressed.

Please amend the paragraph beginning on page 9, line 26 as follows:

Regarding the other record group belonging to the attributions B-E, the controller 7 respectively performs the data compression process in steps A6-2, A6-3, ..., A6-n. In detail, as shown in FIG. 4B, each of the ~~record~~ records belonging to the attributions B-E is encoded, so that the data size is reduced. In this figure, each of the attributions of the records after compressing are shown as ~~Ac-Dc~~ Ac-Ec (however, Ac is substantially the same as A).

Please amend the paragraph beginning on page 10, line 13 as follows:

Here, the database file 10 may be directly formed in the external memory at this stage, or may be formed by the following step. That is, the controller 7 makes the database file 10 on the main memory 3 every time the controller 7 processes one article record, and transfers the database file 10 from the main memory 3 to the external memory 4 after plural processes regarding plural articles of the record have been completed.

Please amend the paragraph beginning on page 12, line 3 as follows:

Here, since an amount of data is large, the data compression process does not compress entire parts of each attribution record group at one time, but compresses each of the attribution record groups by a particular block, which is divided into an adequate amount of data. Therefore, when a certain article record is searched for, the controller 7 searches only the particular block, to which the certain article belongs, in the database file 10.

Please amend the paragraph beginning on page 12, line 10 as follows:

Next, the controller 7 reads out the definition data in the database definition file 11, ~~alike~~ in the same way as in step A2 (step C2). The controller 7 classifies the records obtained at step C1 according to the attributions based on the definition data (step C3). Then, while the controller 7 repeats a loop of steps C4-C7, the controller 7 performs the data decompression process for every attribution record group by using the data decompression portion 9 (2, ..., n) (steps C5, C6-2, ..., C6-n).

Please amend the paragraph beginning on page 13, line 12 as follows:

As ~~describe the above,~~ described above, according to this embodiment, the controller 7 does not compress the data regarding the record group belonging to the attribution A, which is the record group to be searched, in all of the attributions A-E, but compresses only data regarding the record groups belonging to the attributions B-E, which are the record groups other than the record group to be searched.

Please amend the paragraph beginning on page 13, line 18 as follows:

Therefore, when there is a search request for a particular record, the controller 7 can immediately start the search process without waiting <u>for</u> the data decompression process for the record group belonging to the attribution A, and can ~~perform complete~~ <u>completely perform</u> the search process in a short time. Furthermore, since the record groups belonging to the attributions B-E are decoded (decompressed) only when there is a corresponding record as a result of the search process, it can reduce needless time for performing the data decompression process and can retrieve the requested record. That is, a process time of this embodiment becomes shorter than a conventional system, in which all of the data ~~are~~ <u>is</u> decompressed before the search process. In addition, it can prevent the size of the database from increasing by performing the search process in a short time.

Please amend the paragraph beginning on page 14, line 4 as follows:

Furthermore, the controller 7 reads out and searches only the record group belonging to the attribution A from the database file 10, and reads out and decompresses the other record groups belonging to the attributions B-E only when there is the corresponding record in the database file 10 as a result of the search. Therefore, it can reduce the number of ~~access~~ (loads of the data from the external memory to the main memory) ~~to~~ <u>times that</u> the database file 10 <u>must be accessed</u> during the search process and during ~~obtaining~~ <u>the time necessary to obtain</u> all the requested records, and can reduce the process time.

Please amend the paragraph beginning on page 15, line 15 as follows:

According to the vehicular navigation system of this embodiment, the controller 14 reads out the data stored in the CD-ROM 21, when it is needed, and the controller 14 ~~perform~~ performs route guidance by displaying the data on the display unit 19 or by using voice sound. The present invention is applied to one function for reading out and decompressing the telephone number database, which is stored ~~with being~~ in compressed form.

Please amend the paragraph beginning on page 16, line 14 as follows:

The step A5 is replaced with step A9. At step A9, the controller 7 judges whether the attribution record group is the record group to be searched. When the attribution record group is the record group to be searched, the ~~controller 7 determined as~~ judgment is "YES", and the controller moves to step A7 without performing the data compression process, ~~alike~~ as in the first embodiment. On the contrary, when attribution record group is not the group to be searched, the ~~controller 7 determined as~~ judgment is "NO", and the controller 7 performs the data compression process ~~by using the same way each other among~~ in a like manner for all the attributions (step 10). Here, the steps A9 and A10 correspond to the data compressing means and the data compressing step.

Please amend the paragraph beginning on page 16, line 24 as follows:

As described above, when there is a search request for a particular record in the database file 10, the controller 7 performs the search process, and reads out and decompresses the data belonging to the attributions Bc-Ec of the particular record if there is a corresponding record.

According to the this embodiment, even when there are many such processes, the controller 7 can perform the data decompression process regarding the attributions Bc-Ec ~~in a lump~~ as a whole, and therefore the controller 7 can retrieve the data in a short time.

Please amend the paragraph beginning on page 17, line 23 as follows:

~~As describe the above,~~ As described above, since the controller 7 also compresses the record group belonging to the attribution A as the record group to be searched, it can reduce total process time compared to the conventional method in which the search process is performed after all of the records are decompressed. Furthermore, since the record group belonging to the attribution A is also compressed, the size of the database file 10 can be reduced.

Please amend the paragraph beginning on page 18, line 12 as follows:

On the contrary, in a fifth embodiment, when the ~~controller 7 determines as~~ judgment is "YES" at step A9, the controller 7 compresses the record group belonging to the attribution A with a high-speed decompressable format, which is a relatively low compression rate format and can be decompressed in a short time (step A12). When the ~~controller 7 determines as~~ judgment is "NO" at step A9, the controller 7 compresses the record group belonging to the attribution A with a relatively high decompression rate format (step A12). Here, the steps A9-A11 correspond to the data compressing means and the data compressing step.